

What is claimed is:

1. A method for detecting teneurin signalling, which method comprises:
  - a) determining the presence of a cleaved teneurin product associated with teneurin signalling, wherein said cleaved teneurin product comprises at least a portion of the cytoplasmic domain of teneurin and targets to the cell nucleus; and
  - b) correlating the presence and/or amount of said cleaved teneurin product with teneurin signalling.
- 10 2. A method as claimed in claim 1, wherein said teneurin is teneurin-1, teneurin-2, teneurin-3 or teneurin-4.
- 15 3. A method as claimed in any one of the preceding claims wherein the cleaved teneurin product is formed in tumour cells.
4. A method as claimed in claim 1 or 2, wherein the cleaved teneurin product is formed in neurons.
- 20 5. A method as claimed in any one of the preceding claims further comprising providing a teneurin or a fragment thereof comprising at least a portion of the N-terminal domain of teneurin and at least a portion of the C-terminal domain of teneurin, and a cellular component that cleaves teneurin.
- 25 6. A method as claimed in claim 5, wherein the teneurin is recombinant.
7. A method as claimed in any one of the preceding claims wherein the cleaved teneurin product comprises a tag or label.
- 30 8. A method as claimed in claim 7, wherein said determining step (b) comprises detecting said tag or label photometrically.
9. A method as claimed in claim 7 or 8, wherein said tag is selected from the group consisting of GFP, YFP, hemagluttinin, (Histidine)<sub>7</sub>, a DNA binding domain.
- 35 10. A method as claimed in claim 9 wherein said determining step (b) comprises allowing said DNA binding domain to bind to a nucleic acid comprising regulatory

sequences operably linked to a reporter gene and detecting activity of said reporter gene.

11. A method as claimed in claim 10 wherein said DNA binding domain comprises a  
5           GAL4 DNA binding domain.

12. A method as claimed in claim 9, 10 or 11 wherein said tag is a DNA binding domain and further comprises an NF $\kappa$ B domain.

10           13. A method as claimed in any one of the preceding claims wherein said determining step comprises determining the amount of said cleaved tenascin product.

14. A method as claimed in any one of the preceding claims wherein the cleaved teneurin product regulates expression or activity of a cellular target.

15           15. A method as claimed in claim 14 further comprising detecting expression or activity of said cellular target.

16. A method as claimed in claim 15 wherein said cellular target is PML.

20           17. A method as claimed in claim 15 wherein said cellular target is Zic.

18. A method as claimed in claim 15 wherein said cellular target is ponsin.

25           19. A method as claimed in claim 1, wherein the presence and/or amount of the cleaved teneurin product is correlated to a particular disease or condition.

20. A method as claimed in claim 19, wherein said disease or condition is dependent on cell proliferation and/or neuronal differentiation.

30           21. Use of a detectable cleaved teneurin product associated with teneurin signalling in a method of diagnosis of a neuropathology or cell pathology affected by teneurin signalling.

35           22. A method for assessing the ability of an agent to modulate teneurin signalling, comprising the steps of:

                 (a) contacting teneurin with at least one agent;

(b) detecting cleavage of said teneurin by a cellular component associated with teneurin signalling in the presence of said agent; and

(c) correlating a difference in cleavage of said teneurin relative to when said agent is absent with an indication of the presence of an agent effective in modulating teneurin signalling.

5 23. A method as claimed in claim 22 wherein step (a) is performed by perfusing a cell expressing recombinant teneurin with the agent.

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24. A method for assessing the ability of an agent to modulate teneurin-mediated signalling, comprising the steps of:

(a) exposing a cell to an agent;

(b) detecting expression or activity of a gene regulated by teneurin in said cell; and

(c) correlating a change in expression or activity of said gene with the presence of a modulator of teneurin signalling.

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25. The use of an agent detected by a method of any one of claims 22 to 24 for the manufacture of a medicament for the treatment or prophylactic treatment of a neuropathological condition.

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26. The use of an agent detected by a method of any one of claims 22 to 24 for the manufacture of a medicament for the treatment or prophylactic treatment of tumourigenesis or cancer.

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30 27. The use of a cleaved teneurin product associated with teneurin signalling, wherein said cleaved teneurin product comprises at least a portion of the cytoplasmic domain of teneurin and targets to the cell nucleus; for the manufacture of a medicament for the treatment or prophylactic treatment of tumourigenesis or cancer.

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35 28. The use of a cleaved teneurin product associated with teneurin signalling, wherein said cleaved teneurin product comprises at least a portion of the cytoplasmic domain of teneurin and targets to the cell nucleus; for the manufacture of a medicament for the treatment or prophylactic treatment of a neuropathological condition.

29. A method of treating an individual in need of treatment or prophylactic treatment of tumorogenesis, cancer or a neuropathological condition, said method comprising administering an effective amount of an agent identified by any one of 5 claims 22 to 24 sufficient to ameliorate the symptoms of said individual.

30. A method of treating an individual in need of treatment or prophylactic treatment of tumorogenesis, cancer or a neuropathological condition, said method comprising administering an effective amount of a cleaved teneurin product 10 comprising at least a portion of the cytoplasmic domain of teneurin, which targets to the cell nucleus, sufficient to ameliorate the symptoms of said individual.

31. A composition comprising a cleaved teneurin product and a cellular target of the cleaved teneurin product. 15

32. The composition of claim 31, wherein said cleaved teneurin product comprises at least a portion of the cytoplasmic domain of teneurin and targets to the cell nucleus.

33. A composition as claimed in claim 31 or 32 wherein said cellular target is PML. 20

34. A composition as claimed in claim 31 or 32 wherein said cellular target is Zic.

35. A composition as claimed in claim 31 or 32 wherein said cellular target is ponsin. 25

36. A composition as claimed in claim 31 or 32 wherein said cellular target is myc.

37. A composition as claimed in claim 31 or 32 wherein said cellular target is p53.

38. A kit comprising a teneurin and a protease. 30